HYDRALOOP®

SMART WATER SAVING

Hydraloop H350, H300 & H600

Installation manual

NSF

Certified to NSF/ANSI Standard 350

Dear customer,

Thank you for purchasing this Hydraloop device.
Read this manual before using the product and keep it in a safe place for future reference. To ensure safe and proper operation, we recommend regular maintenance of the product. Our Service and customer service organization can help with this. We hope you will enjoy the product for many years to come.

Contents

1. Safety

1.1 General safety instructions

WARNING

- Read this manual before installing and/or using the Hydraloop.
- This Hydraloop creates **NON-POTABLE** water. **DO NOT** use the output water as drinking water.
- The Hydraloop devices should only be opened or serviced by authorized persons/installers. Risk of electric shock may occur.
- The Hydraloop should be place and installed according installation directions for save operation.

WARNING

- A damaged power supply cable should always be replaced by authorized persons/installers to avoid dangerous situations.
- **Always** disconnect the Hydraloop from the mains before servicing or maintenance.

ATTENTION

- After servicing the Hydraloop, the installation should always be checked for leakages.

1.2 Recommendations

ATTENTION

- The Hydraloop should only be placed indoor with an ambient temperature between 14-35°C | 57-95°F.
- The Hydraloop should never be placed in direct sunlight.
- The Hydraloop should always be easily accessible for service and maintenance

ATTENTION

- The Hydraloop should only be moved or transported in an upright, vertical position.

ATTENTION

- **Never** use greywater from kitchen sinks, dishwashing machines or laundry machines as input water to the Hydraloop. Only use water from shower, bath, or air conditioning units.

1.3 Responsibility and Liability

1.3.1 Manufacturer

Hydraloop warrants the proper working of the system according to its general sales conditions.

As a manufacturer, Hydraloop is not liable in the following cases:
- Failure to follow the instructions for installation and maintenance of the Hydraloop.
- Failure to follow the instructions for use of the device.
- Inadequate or insufficient maintenance of the device

1.3.2 Installer

The installer is responsible for the installation and initial commissioning of the Hydraloop device.
- The Hydraloop device should always be installed according the local legislation and standards.
- Perform initial commissioning and necessary checks.
- Explain the installation to the user.
- Hand over all manuals to the user

1.3.3 User

To ensure optimal functioning of the Hydraloop device, please observe the following:
- Read and observe the instruction manuals of the Hydraloop device.
- Request the assistance of a qualified installer for installation, commissioning, service and maintenance.
- Ask the installer for an explanation of the installation.

2. Introduction

Hydraloop Systems B.V. offers a range of patented residential greywater recycling products. Grey water from the shower and bath is collected, cleaned and disinfected and reused for flushing the toilet, the laundry machine and garden. Optionally, approximately 50% of the laundry machine water can be recycled through the laundry machine recycling option. The pipes need to be prepared in the house by isolating the drainpipes of the showers/baths from the drainpipes of other water sources (such as sinks, kitchen and toilets). The toilet fixtures and the laundry machine have separate supply pipes for the water recycled by the Hydraloop system (separated from potable water). Hydraloop residential water recycling products are certified to NSF/ANSI standard 350.

3. Product definition

Hydraloop models are H150, H300, H350 and H600*

- Hydraloop water recycling unit for bathing water with one or more water outlets.
- one recycled water outlet to feed the toilet cisterns,
- a second recycled water outlet for feeding the laundry machine,
- a third recycled water outlet to use for the garden.
- in addition to recycling bathing water + 50% of the laundry water can be recycled by the Hydraloop.

* Product availability may vary by state or country.

It is not allowed to feed the Hydraloop unit with water from hand basins, dishwashers, kitchen sink or floor drains.

4. Design, construction & components

The Hydraloop unit is a turnkey water recycling product. The Hydraloop is a pre-assembled product that includes;

- all water tanks for treatment and storage of the treated recycled water
- a boost pump to distribute the recycled water by independent outlets to the users of the recycled water like toilets, laundry machine and garden.

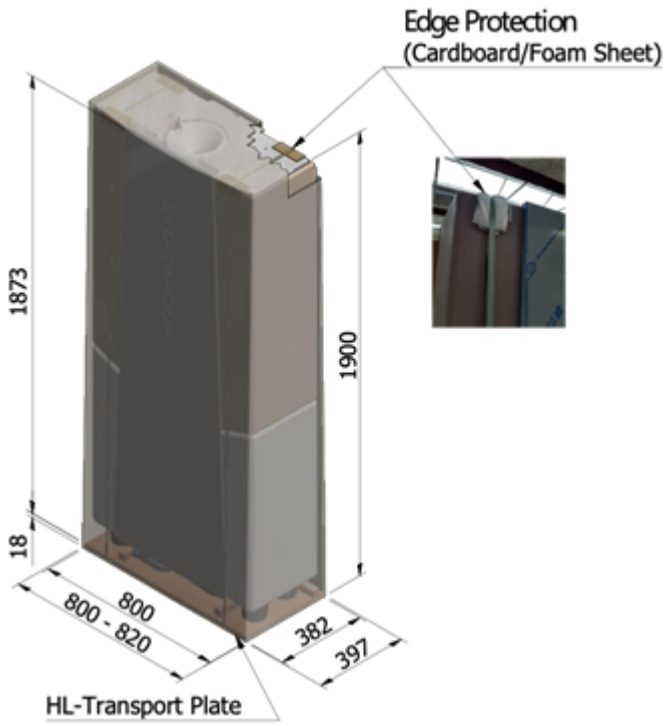
The Hydraloop unit requires:

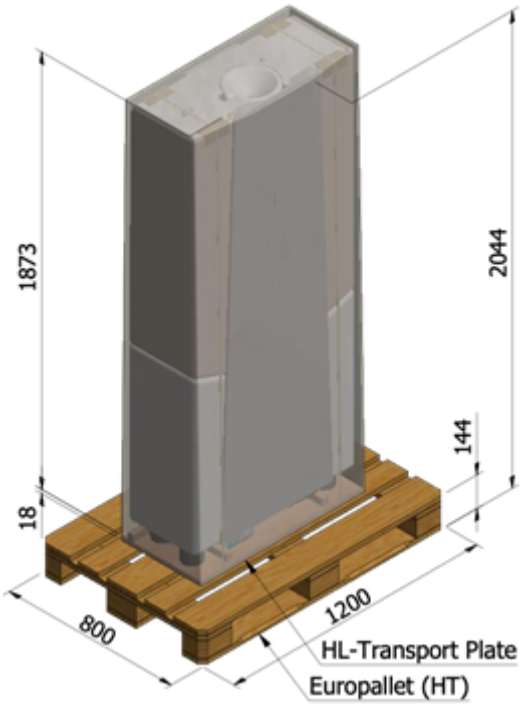
- greywater from bath and optionally laundry machine (via the laundry water recycle option).
- one or more independent recycled water outlets depending on model and version.
- a connection to back-up water supply (potable water or rainwater).
- a connection of wastewater drain to sewer.
- a connection to electrical power.
- a connection to WiFi.

5. Off-loading and unpacking instructions

The Hydraloop unit will be transported to your location mounted and strapped onto a HL-Transport plate, wrapped in protective foil and mounted onto a wooden pallet. When moving the Hydraloop unit it is important to **always** keep it in an upright, vertical position. Bringing the Hydraloop unit into a horizontal position may cause damage to its internal components and seals. It is very important to handle the Hydraloop with care and to leave the protective foil on until it is placed at its final installation position. After it is removed from the wooden pallet leave it strapped on the wooden transportation plate and the unit can be moved with a 2-wheel trolley. Only when it is near its final position then remove the foil and carefully lift the unit from the plate and place it at its final position.

Transportation of Hydraloop H300





1x Hydraloop H300 on HL-transport plate
(Transport upright!)

System individually secured to HL-transport plate with strapping and packed in bubble- and shrink wrap.

Total dimensions (H x W x L):
190x82x40 [cm] / 74.8x32.3x15.8 [in]

Combined weight approx.:
100 [kg] / 220.5 [lb]

1x Hydraloop H300 on HL-transport plate + Europallet
(Transport upright!)

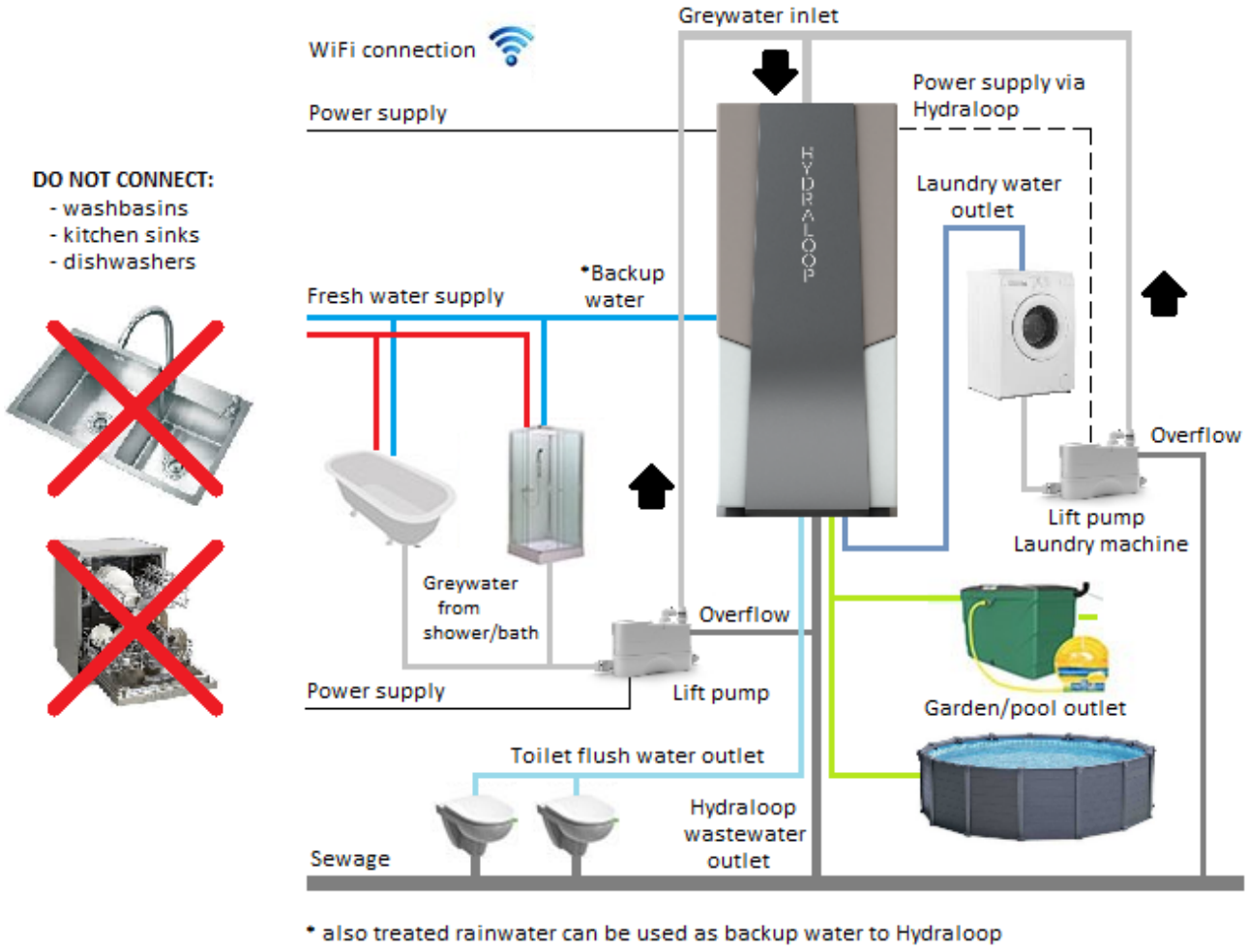
System individually secured to HL-transport plate with strapping and packed in bubble- and shrink wrap. Placed secured onto Europallet.

Total dimensions (H x W x L):
205x80x120 [cm] / 80.7x31.5x47.2 [in]

Combined weight approx.:
125 [kg] / 275.6 [lb]

6. Installation

The installation and commissioning of the Hydraloop unit can only be carried out by approved installers who have been trained by Hydraloop Systems B.V. This chapter will provide both basic and detailed information for the most important installation steps. The image below shows an overview of the installation principle. See next chapters for more details to each subject. (use this image for reference).



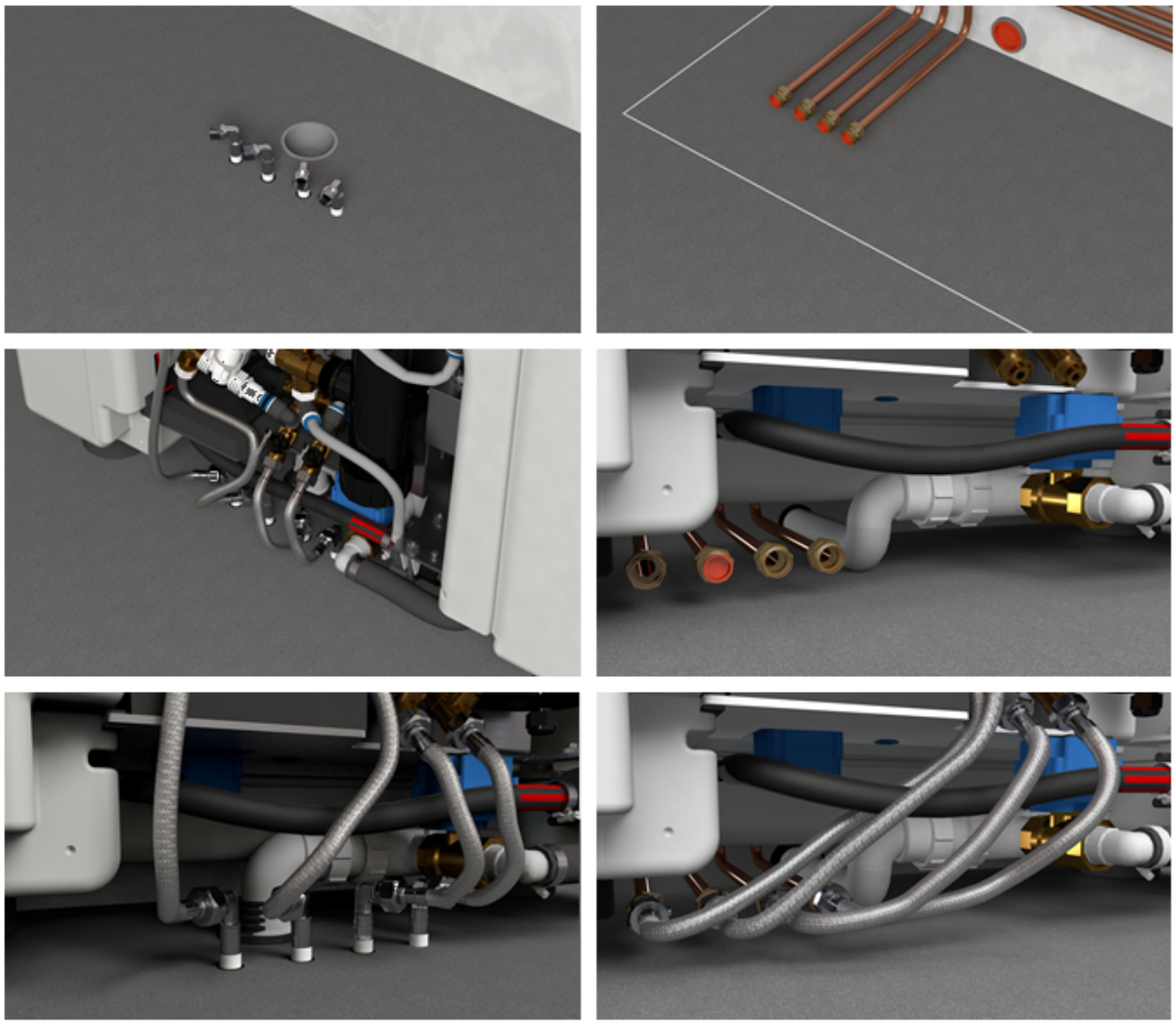
- Use **shower & bath** water as source water and optionally laundry machine water in case a Hydraloop laundry machine recycle option is installed. **No washbasins, kitchen sinks & dishwasher may be connected!**
- Use **shower & bath** water as source water and optionally laundry machine water in case a Hydraloop laundry machine recycle option is installed. **No washbasins, kitchen sinks & dishwasher may be connected!**
- Connect all separated greywater pipes from shower and bathtubs via a single 2" pipe to the 1.5" inlet on the top of the Hydraloop unit (if necessary via a lift pump).
- Hydraloop has a built-in overflow facility, no additional connection to the sewer is required
- The 50mm|2" greywater feed tube from the shower/bath **MUST** vent to open air in accordance with local plumbing code through a vent stack to support shower water flowing without airlocks to the Hydraloop unit and to ensure proper functioning of the Hydraloop unit.
- With the laundry machine recycle option installed, the wastewater tube from the laundry machine needs to be fed into the inlet of the Hydraloop system via a sanitary lift pump with a built-in overflow. The power cord of the sanitary lift pump should be connected to the Hydraloop system so the lift pump can be controlled by the Hydraloop unit

Basic installation steps:

1. Check if system and installation will comply with applicable country, state or local regulations and that the preparation of the plumbing is preventing and protected against back flow and cross connection assuring protection of the public water supply. (Ch 6.1, 6.2 and 8)
2. Check that the greywater pipes and the distribution pipes of the recycled water have been properly installed in accordance with the recommendations in this manual. (Ch 6.1, 6.2)
3. Place the Hydraloop unit on its planned position (Ch 6.4)
4. Connect incoming greywater to the inlet on the top, in combination with lift pump if necessary. (Ch 6.5, 6.6)
5. Connect backup water inlet connection. (Ch 6.7)
6. Connect Hydraloop recycled water outlet connections (Ch 6.7)
7. Connect Hydraloop wastewater outlet to sewer (Ch 6.7 and 6.8)
8. Plug 100-240V power cord into wall socket
9. Run the commissioning test using the Hydraloop App (Ch 7)

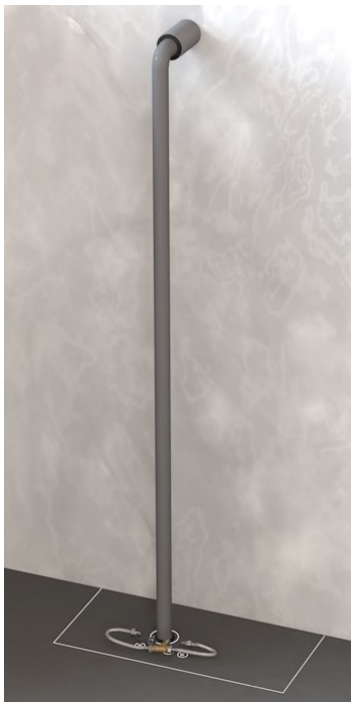
6.1 Installation considerations

Note; The plumbing connections for greywater and backup water inlets and recycled water outlets and Hydraloop wastewater outlet can be installed concealed in the floor, under the floor or mounted on the floor & wall behind the Hydraloop unit. An example of concealed connections can be seen in the left images below. On-floor & wall connections can be seen in the right images.

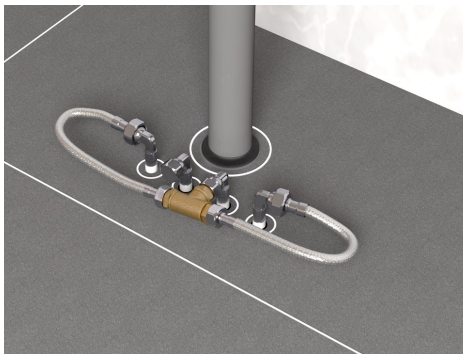


6.2 Installation preparation

We strongly recommend - in case of new build - **not** to place, connect and commission the Hydraloop unit during the building process but only **after** the house is fully ready and all works are finished. At all times avoid that building dirt, chemicals or sand can enter into the Hydraloop unit as it will cause damage.



A temporary bridge connection can be installed so that backup water (freshwater or rainwater) can serve the toilets and laundry machine and greywater from showers flows direct to the sewer until the Hydraloop unit is installed. More information regarding installation preparation can be found in our **FACT SHEET "Have your building Recycle Ready"**.

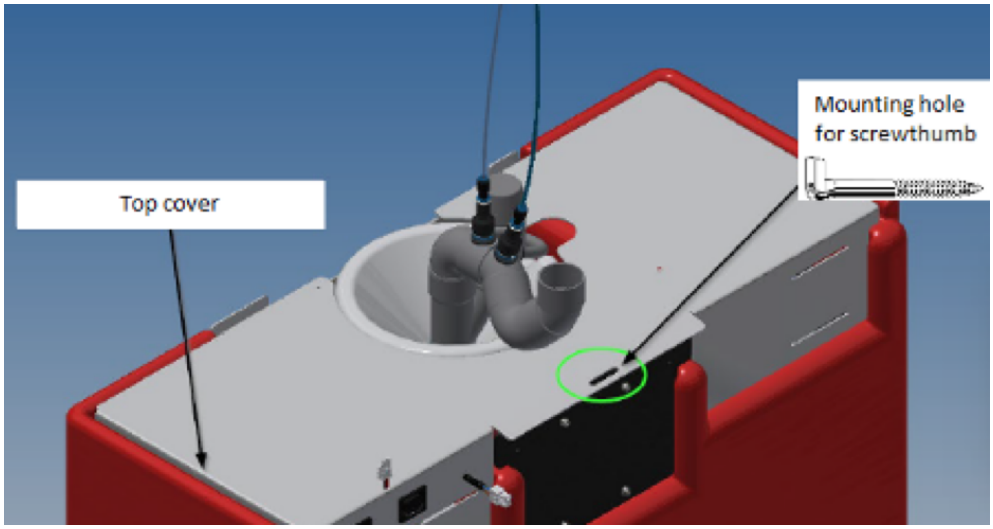


6.3 Front plate removal

Remove the stainless-steel front plate, using a lever, on the lower side of the front plate to carefully lift the stainless plate up. The plate is holding its position due to its shape so once it comes upwards it will be free to remove. Perform with care.

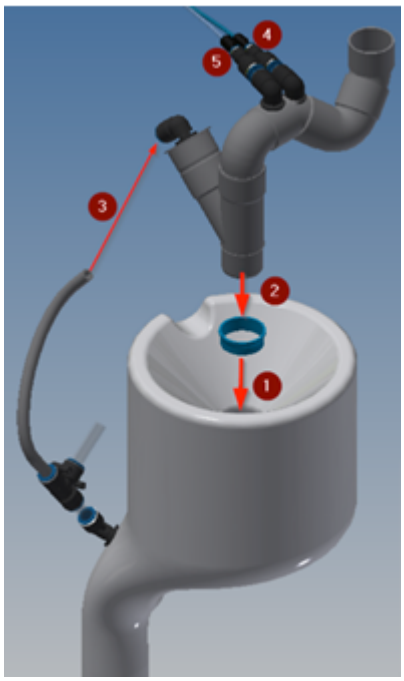
6.4 Hydraloop wall mounting instructions

Hook the mounting hole of the Hydraloop top plate onto the screw thumb, which you should plug into the wall, so the Hydraloop is fixed to the wall and protected against falling over.

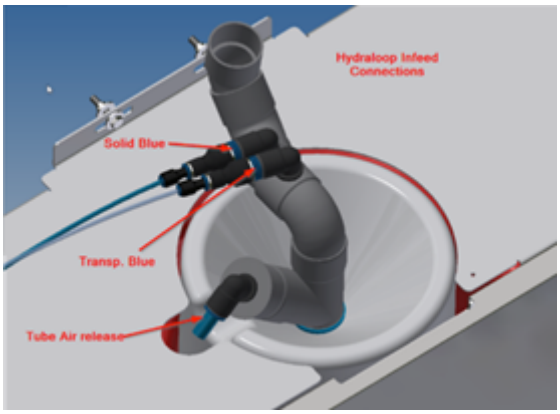


6.5 Hydraloop greywater inlet installation

Place the Hydraloop supply pipe and incoming water sensor as following:



1. First place the blue sealing ring in the top lid in feed channel.
2. Install the in-feed tube system into the sealing ring with a minimal amount of grease (Vaseline) applied on the Y-tube end.
3. Connect the air release tube in the push-in fitting of the branch of the Y-tube.
4. Connect the solid blue pressure sensor near the 45° bend.
5. Connect the transparent pressure sensor near the 90° bend.



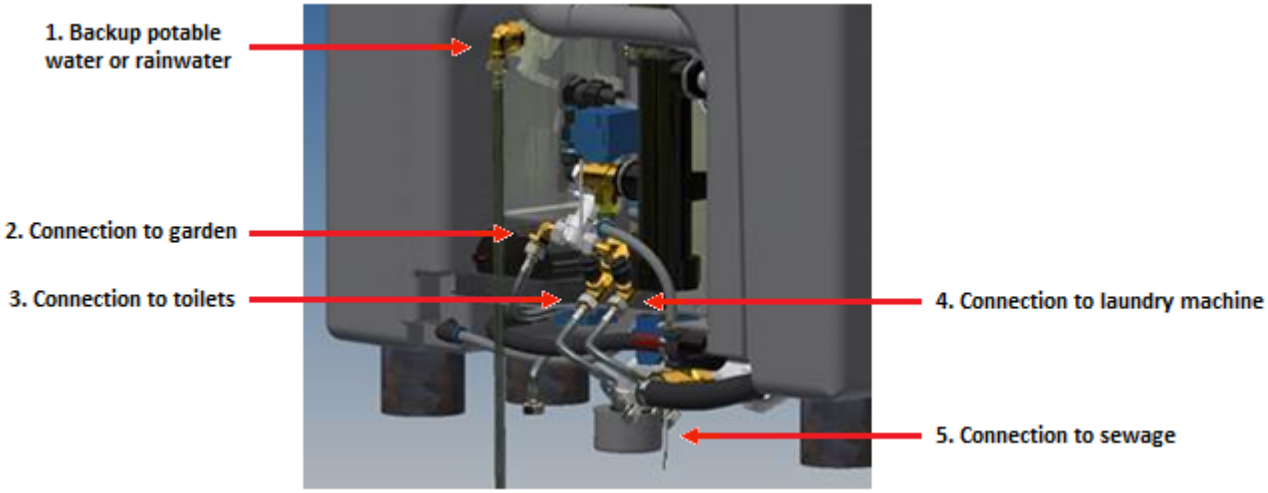
6.6 Using a lift pump

If the Hydraloop unit is on the same or higher floor as the shower/bath or laundry machine an appropriate lift pump has to be installed to pump the greywater from the source up into the Hydraloop system.

If a Hydraloop unit is equipped with the laundry machine water recycle option, the ideal place for installation would be close to the laundry machine, so that the laundry machine lift pump can be placed next or close to the laundry machine itself. If the laundry machine is placed on the same floor as the Hydraloop but in another room, the laundry machine lift pump can be installed close to the laundry machine itself and the greywater is lifted up, and from there flows by gravity to the Hydraloop unit water inlet. The laundry machine lift pump is controlled by the Hydraloop unit. The laundry machine lift pump power cord should be connected to the Hydraloop. For more information check the installation manual of the applied lift pump.

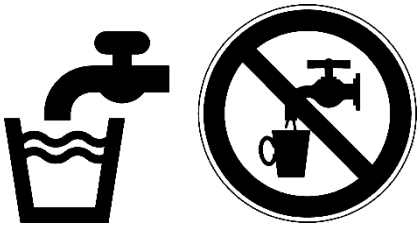
6.7 Water in/outlets

The Hydraloop can feed multiple toilets. A second Hydraloop outflow valve feeds the laundry machine. The Hydraloop unit can have optionally a third valve-controlled water output which can supply recycled water to the garden or pool. Note that this outlet will not be permanently pressurized, unlike the other water outlets. This outlet only supplies when a surplus of recycled water is available.



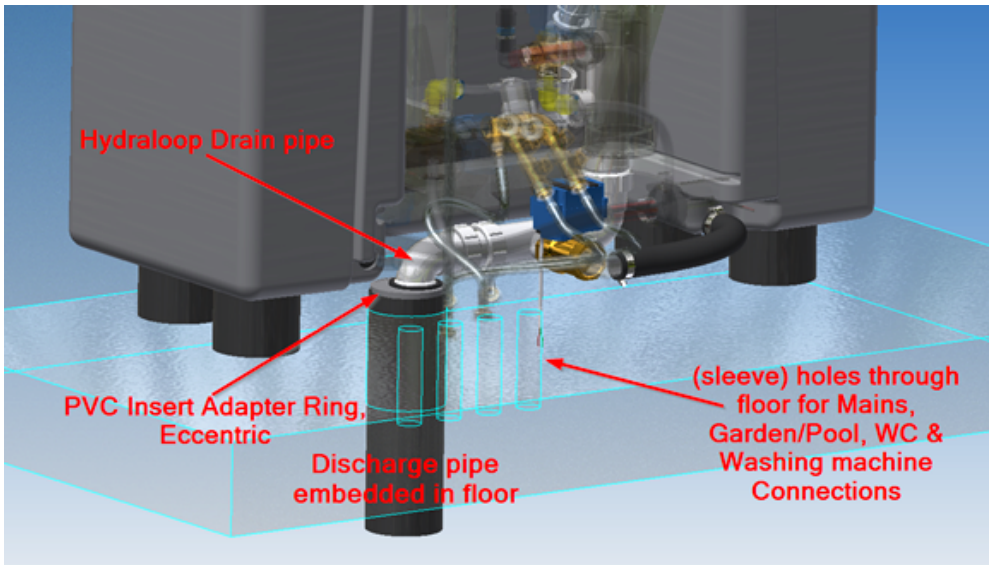
Connection specifications Hydraloop H350, H300, H600					
Input connection		Size (imperial)	Size (metric)	Thread type	Additional information
-	Greywater supply	1.5"	40 mm.	-	Into feed channel
1.	Backup water supply	1/2"		male	Min. Flow 4.5 Gallon - 20 liters p/m
Output connection		Size (imperial)	Size (metric)	Thread type	Additional information
2.	Garden/pool supply	1/2"			Connect to flexible hose
3.	Toilet supply	1/2"		male	Connect to flexible hose
4.	Laundry machine supply (optional)	1/2"		male	Connect to flexible hose
5.	Drainpipe (wastewater)	1.5"	40 mm.	male	Into rubber sleeve (chapter 7)

Label or color code the water pipes to designate that these water pipes are running recycled water. Check local plumbing code's if applicable. Draw-off points for non-potable water shall be identified with the words "Non-potable water" or by a prohibition sign as shown below.

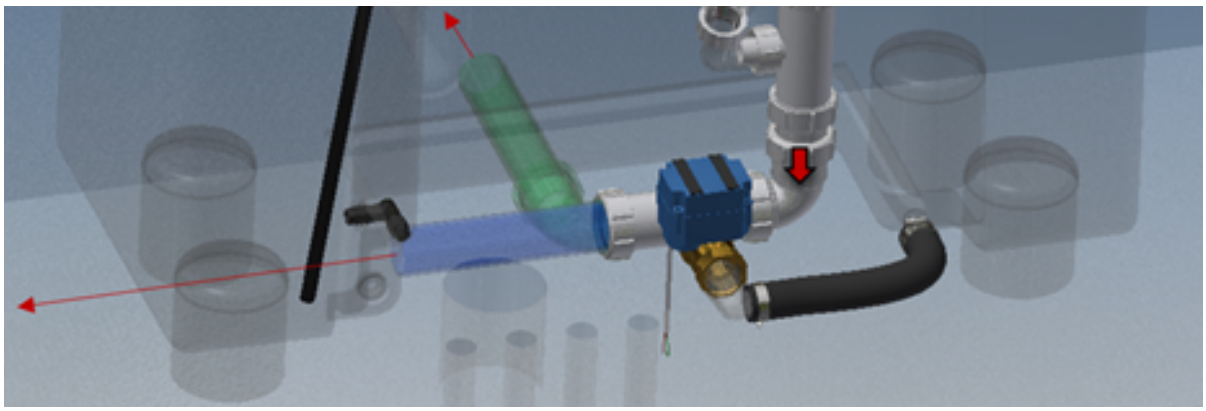


6.8 Hydraloop wastewater outlet installation

The 40mm|1.5" wastewater drainpipe below the Hydraloop unit has to be connected to the sewer with PVC eccentric adapter ring or *rubber reducing sleeve trough the floor (first image) or backwards to the wall (second image)



Hydraloop drainpipe connected to sewage by using reducing sleeve



A backwards connection to the sewage system

*(Rubber reducing sleeve)

7. Commissioning & Initial startup of the Hydraloop unit

The commissioning should be performed by an accredited Hydraloop Partner that is trained to commission the Hydraloop unit.

Commissioning steps:

1. Open external back up water source (tap or rainwater). Be sure the water pipe is rinsed before connecting to the Hydraloop unit so there is no dirt entering the float valve and Hydraloop unit, because this could damage the float valve, electric valves and the water pump.
   - The small water tank on the lower left side should fill with water and the float valve should close when the maximum water level in the tank is reached.

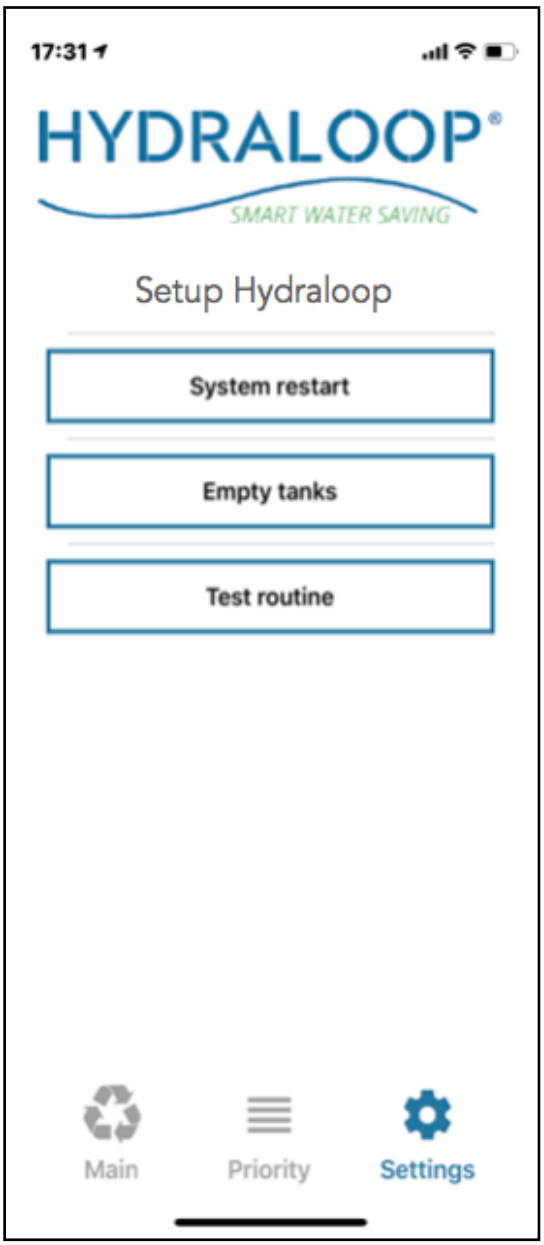
2. Switch Hydraloop power switch on
   - This start up procedure takes about 2 minutes.
   - After this, please flush each toilet after each other in the building once, to push air out of the pipes.
   - The Hydraloop unit will now only supply backup water to the house because at this stage the Hydraloop unit is not yet activated for recycling. The LED light on the front plate will be green. You can now check all connections to and from the Hydraloop unit for leaks.

3. WiFi setup: After the Hydraloop unit is switched on, it will automatically create a WiFi network showing a number (looks like 00:AB:00:AB:11)
   - elect this Hydraloop WiFi network, that shows the long number, on your smart phone, tablet or computer (device) and enter the password: PASSWORD
   - Check if your device is connected to the Hydraloop WiFi network (with the long number).
   - Open an internet browser on your device and enter the URL 192.168.4.1. A page will open.
   - Enter the existing WiFi network of the house/building that you want the Hydraloop unit to connect with, and enter the password belonging to this WiFi network on the page that is displayed and press 'Submit'. The Hydraloop unit will now connect with this local WiFi network. Note: Spaces, commas, capitals etc. all should be entered correctly.

   Note: If the WiFi network does not have a password leave this field blank.

4. Enter/scan Hydraloop ID with Hydraloop App:
   - Download and open the Hydraloop app on a smartphone (IOS or Android). Go to 'settings, installation, enter/scan Hydraloop ID'.
   - Enter the serial number of the Hydraloop unit that is printed on the Hydraloop Data Plate that is attached on the right hand top of the Hydraloop unit,
   - or press 'scan barcode' and scan the bar code that is visible on the same Hydraloop Data Plate that is attached on the right hand top of the Hydraloop unit.
   - After the information is entered correctly the central server at Hydraloop Systems B.V. will connect to this specific Hydraloop unit and will perform a brief system check.
5. Installers Initial Setup: For the initial setup the installer needs to press 'Setup Hydraloop' and enter the 'installers code'. This will give access to the 'setup' section of the App.
   - (if you do not have the installers code please contact Hydraloop Systems B.V.)

After this, three options are accessible:



1. System restart: Pushing this button restarts the Hydraloop system.

2. Empty tanks: Pushing this button opens the purge valves of the Hydraloop system. This might be necessary for servicing.

   It is also possible to empty the water tanks without WiFi connection/App:
   - unplug the power plug from the wall socket,
   - wait until the audible alarm (2 beeps) sound,
   - immediately plug in again, if inserted back in time 1 confirmation* beep will sound,
   - immediately unplug the power plug again,
   - after 2 beeps immediately plug it in again.

   * If the 1 confirmation beep did not sound, you have to insert quicker after the 2 beeps. To repeat the procedure: wait 1 minute and repeat procedure.

3. Test routine: This option starts the Hydraloop test routine. The test routine performs all actions the Hydraloop normally performs for treatment in about 15 minutes. This test should always be performed at installation and after replacement of parts. It is necessary to do a test routine to check for possible damage caused by transportation of the unit:
   a. Open the Hydraloop front plate by lifting it from the floor up and then you can move it upwards and set it aside, so all tanks and internal parts are visible,
   b. Press 'test routine' and open one of the showers in the house and wait until shower greywater enters the Hydraloop unit. Let it run for about 12 minutes and then close the shower. The test routine takes about 15 minutes in total. After this test routine the system is ready for usage. If an issue occurs the App will inform you about the issue. If you have questions, please contact us.

Note: Check the Hydraloop unit for water leaks during the test routine.

If you need assistance call your Hydraloop dealer or contact Hydraloop technical support via email support@hydraloop.com or phone on number: +31 88 100 3500 (EU) | +1 414 89 500 21 (USA)

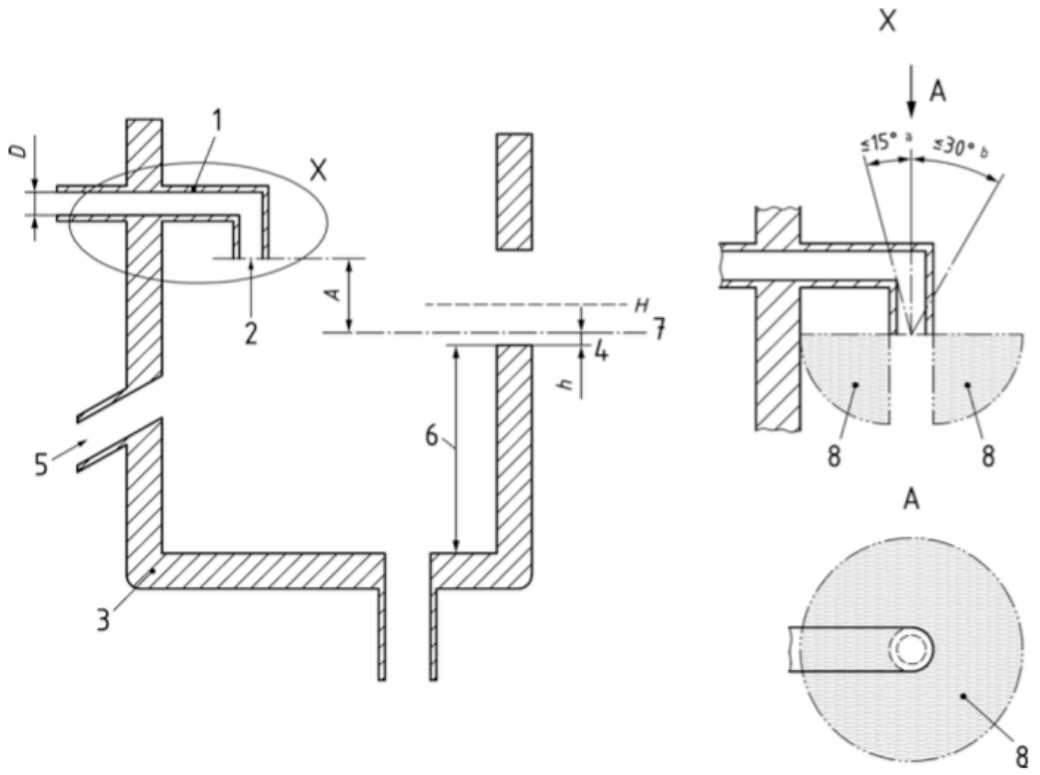
8. Startup time

The Hydraloop unit needs 21 days to develop the biological treatment process and to become fully operational. The greywater treatment will start from the very first day, however this recycled water will be purged into the sewer and backup water will be supplied instead of recycled water. After this start up period of 21 days, the Hydraloop unit will automatically switch over to offer recycled water to the toilets, laundry machine and/or garden.

9. Potable water backup & backflow prevention

In the event there is not enough recycled water available, the system will automatically switch to back-up water (potable or rainwater). As soon as new recycled water is available the Hydraloop unit will automatically switch to supply recycled water. The Hydraloop unit is connected to its backup water supply via an air gap to protect the tap water against back flow or cross contamination. Additionally, a non-return valve is mounted on the point of incoming backup water.

An "AB" air gap is a permanent and vertical distance between the lowest point of the feed orifice and the critical water level. The overflow shall be of non-circular design and shall be able to evacuate the maximum flow of water in the event of overpressure



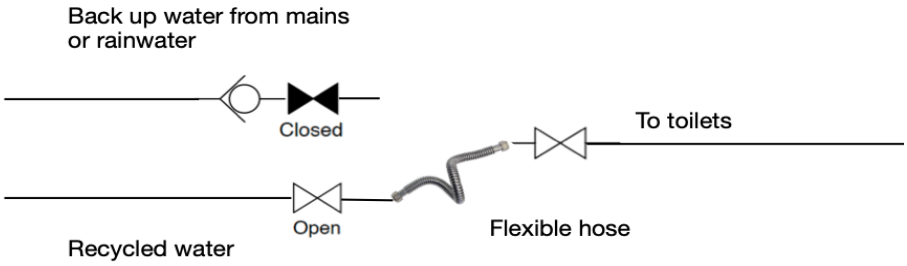
Key

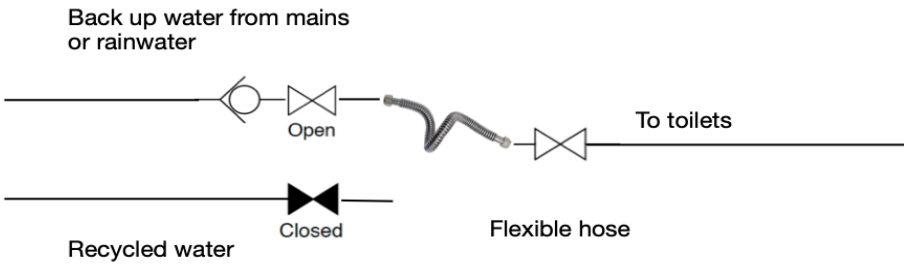
1	feed pipe	7	critical water level (distance h)
2	feed orifice	8	2D Minimum radial clearance
3	receiving vessel	A	air gap (distance)
4	spillover level	D	internal diameter of feed pipe (bore)
5	optional warning pipe	H	maximum water level
6	$U_w \geq 5h$ (internal vertical surface)		
		a	15° maximum from the vertical (validation by test or calculation)
		b	30° maximum from the vertical (validation by test only)

10. Plumbing backup facility

In case of maintenance or power failure it might be possible that supply of treated recycled water or back-up water is temporarily not available. To overcome this a bypass facility can be installed.
The bypass setup must comply with the applicable regulations of the country, state or municipality.

A bypass facility as show in the picture below using a flexible hose could be made to ensure availability of water.





11. System malfunction

The Hydraloop unit is a very reliable system and all critical components are monitored continuously by the unit itself and by the Hydraloop server through the WiFi internet connection. In the unlikely event a component fails - for example the UV lamp - the Hydraloop unit will automatically switch to its backup water and everything in-house will function as usual, but no recycled water will be distributed as a precaution. The visual alarm light on the Hydraloop front plate will blink red 4 times per minute indicating an abnormal situation, a warning message is sent via the WiFi connection to the Hydraloop monitoring server and to the customers Hydraloop App and an audible beep as well will sound 4 times per minute. (see more about alarms on page 23, article 14)
Warning: Hydraloop is designed for 'normal usage' and is not designed to receive solid materials like stones, chemicals, paint residues, hair dye, bleach and disinfectants or any other matter that is unusual for shower/bath and laundry machine water. In the event these substances are entered into the Hydraloop unit, the system itself can be damaged and the water treatment can be disturbed.
Note: Hydraloop Systems BV is not liable for any damage if the above or any other abnormal substances are entered into the Hydraloop unit and the unit and/or the laundry machine/laundry is therefore damaged.

12. Explanation visual alarm light and audible alarm

If one of the below mentioned alarms are activated, the Hydraloop unit will stop offering recycled water and will offer backup water unless in case of Water distribution pump failure.

High water alarm: Audible alarm 2 beeps every minute, visual alarm 2 light pulses every minute

Air pump alarm: Audible alarm 3 beeps every minute, visual alarm 3 light pulses every minute

UV-C disinfection lamp alarm: Audible alarm 4 beeps every minute, visual alarm 4 light pulses every minute

Water circulation failure: Audible alarm 5 beeps every minute, visual alarm 5 light pulses every minute

Water distribution pump failure: Audible alarm 6 beeps every minute, visual alarm 6 light pulses every minute

In case of a water distribution pump failure, it can happen that water distribution to the users is blocked or limited

If you need assistance call your Hydraloop dealer or contact Hydraloop technical support via email support@hydraloop.com or phone on number: +31 88 100 3500 (EU) | +1 414 89 500 21 (USA)

13. Maintenance

We recommend a check performed by a Hydraloop accredited installer once every two years.

This check contains the following elements:

- Descale the Hydraloop unit with a citric acid solution to descale the integrated water tanks.
- Remove, clean and descale the air diffuser.
- Replace the rubber membranes of the air pump every three years (according to the manual of the air pump supplier).
- Replace the UV light bulb every two years by unscrewing the lid on the UV-C lamp housing.
- Effluent samples can be collected using the water valve that is connected to the laundry machine.

In regions with very high levels of water hardness more frequent descaling of the water tanks may be necessary. Please check water hardness during installation.

14. Warranty

Hydraloop Systems B.V. provides a 5-year warranty starting on the delivery date on all non-wearing parts, and a 1-year warranty on all other parts.

15. Specifications & Data Plate

Dimensions (WxDxH):
80cm|31.5" x 34cm|13.5" x 185cm|75" *
*please note that with the incoming water pipes 210cm|83" of height is required.

Material specification:
The water tanks are made of Medium Density Polyethylene.

Backup water (potable or rain water) connections:
Flow minimal 20 lit.|4.5 gal. per minute, pressure minimal 2 bar|29 Psi.

Power supply:
100/240V, 20W (24V internal)

Expected power consumption: ±200 kWh/year

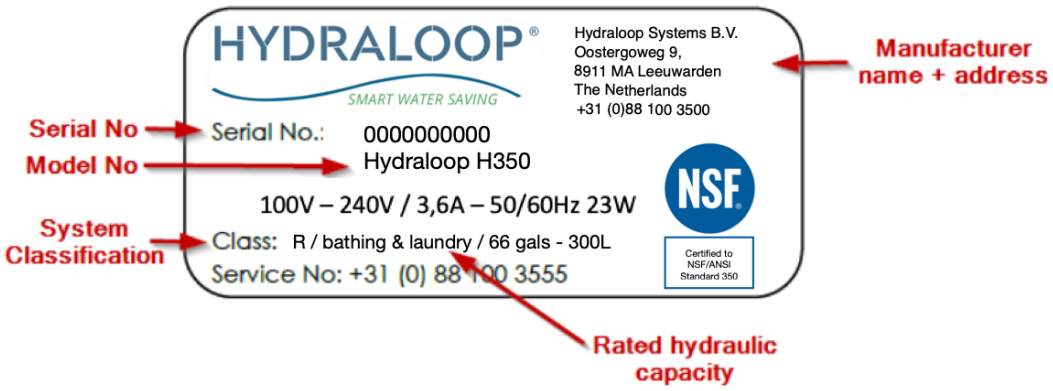
Average recycled water quality:
Hydraloop Residential water recycling products are certified to NSF/ANSI standard 350

CBDO5 (mg/L) < 10
TSS (mg/L) < 10
Turbidity (NTU) < 5
E. coli (MPN/100mL) < 14
PH (SU) 6.0 - 9.0

Certified to NSF/ANSI Standard 350

Noise level:
+ 44 dB

Data Plate / Service Label:
The Hydraloop unit has a permanent data plate attached on the top of the unit that should look like the example below.



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